

## **THE CONTRIBUTION OF THE GENERAL URBANISM PLAN TO ENVIRONMENTAL PROTECTION IN NEGREȘTI COMMUNE, NEAMȚ COUNTY**

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**Keywords:** water protection, sewage control, landslides.

**Abstract.** The commune is placed in the central part of Neamț county, has a surface of 3493 ha and a total population of 1941 inhabitants (2005). It extends on the eastern summits of Stânișoara Mts. and the Moldavian Subcarpathians, respectively the Cracău-Bistrița Depression. The climate is continental with excessive trends, with a mean temperature of 8.6° C and average annual precipitations of 628.8 mm. The whole territory belongs to Horaița hydrographic basin, a tributary of Almaș. The existing land use categories evidence the dominant agricultural and subordinately forestry character of the commune. After the application of the General Urban Plan (GUP) to 777.12 ha the inhabited surface and that designed for economic or social activities will be increased. The commune is provide with electric energy, communication network with optical fiber and asphalted access roads. The problems stand in the water alimentation from wells, the unregularization of Horaița's floodplain, the lack of water and natural gases alimentation and the collecting of sewage waters. The determinations regarding drinking water from July 2009 evidence the bacteriological pollution of the underground waters from the center of the commune. The existing dysfunctions thus make directions for future actions. Natural risks are given by floods in the inhabited area and landslides outside it, and the measures imply the improvement of the inhabiting conditions.

### **Introduction**

The commune is located in the central part of Neamț county, 18 km from Piatra Neamț, has a surface of 3493 ha and a total population of 1941 inhabitants (2005). It extends on the eastern summits of Stânișoara Mts. and the Moldavian Subcarpathians, respectively the Cracău-Bistrița Depression, which in this sector develops entirely on the valley of Horaița, tributary of Almaș River.

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The territory of Negrești commune develops on the *Vrancea nappe* from the mountainous area and the *Carpathian molassic nappe* deposited in the Miocene, after the emplacement of the external flysch. The molasse represents the subcarpathian nappe, individualized after the moldavic tectonic movements from the beginning of the Sarmatian.

The climate is continental with excessive trends, with a mean temperature of 8.6° C and average annual precipitations of 628.8 mm.

The whole territory belongs to Horaița hydrographic basin, a tributary of Almaș and later of Cracău River, which in its turn is a left side tributary of Bistrița River.

Upstream the limit with Dobreni commune, Horaița has a basin surface of 43 sqkm, an average altitude of 560 m and a multi-annual discharge of 0.387 sqm/s or 9 l/s/sqkm.

The vegetation units are represented by forests of beech and hornbeam (*Fagus sylvatica* and *Carpinus betulus*) in the eastern part of the territory and forests with fir and beech (*Abies alba* and *Fagus sylvatica*) with *Pulmonaria rubra* in the western part of the territory.

The soils of the territory are represented by Regosols, Aluviosols, Phaeozems, Preluvosols, Luvosols and Gleysols.

### **1. The objectives of the General Urbanism Plan**

The objectives of the GUP are represented by the planning of the commune administrative territory in conformity with the requirements of the European Union. The administrative surface of the commune is of 3493 ha, from which the agricultural terrains occupy 2259 ha (64.68%) and the other land use categories 1234 ha (35.32 %). The repartition of the total surface of the territory on land use categories is as follows: arable – 1244 ha; pastures – 749 ha; forage – 220 ha; orchards – 46 ha; forests – 1049 ha; waters – 31 ha; roads – 45 ha; constructions and backyards – 66 ha; unproductive – 43 ha.

The agricultural terrain of the commune is composed of arable terrains – 55.07 %, pastures – 33.16%, forage – 9.74 % and orchards – 2.03 %. The main crops are corn and clover and many of the arable terrains are use for forage and rarely as pastures. In the other categories enter forests – 85.01 %, waters – 2.51 %, roads – 3.65 %, constructions – 5.35 % and unproductive terrains – 3.48 %.

Negrești commune has at present a constructed area of 488.29 ha and the outer area of 3004.71 ha. The GUP proposes for constructed areas a surface of 777.12 ha. The upper values underline the dominant agricultural and subordinately forestry character of the commune, bringing up front the possibilities for future development through the superior valorification of the terrains' productive

capacity, as a consequence of the application of technologies recommended as good agricultural practices or of a rational exploitation of the forests.

The later offer the chance of capitalizing wood and forest-specific products and ensures conditions for the development of tourism through its more important components represented by agro-tourism, sport, cultural, historic, religious tourism and so on.

The main problems that need to be solved by the GUP refer to the extension of the built area and the multiplication of services for the inhabitants.

The commune of Negrești has at present a built area of 488.29 ha that will be extended after the application of the GUP to 777.12 ha. The tendency reported to the proposed surface desires:

- an increase in the percentage of the surfaces attributed to inhabiting areas, needed for the future development, green areas, protection, sport or recreation areas;

- an increase in the percentage of the surfaces occupied by institutions and public interest services;

- an increase in the percentage of the surfaces occupied by industrial units and deposits, communication networks, agrarian and husbandry units, communal households and cemeteries.

In the general memoir of the General urban Plan are presented:

- the economic relations with the neighboring areas, the highest importance being held by the economic potential of Piatra Neamț municipality;

- the demographic relations which have profoundly changed as a consequence of the closing of many economical units, the population fluxes going now towards the rural environment;

- the socio-cultural relations for education, health protection, finances, banking and insurances are coordinated by Piatra Neamț municipality. The Horaița Monastery and Horăicioara convent represent the closest spaces for religious recollection from the region. The commune preserves sites of archeological importance belonging to the Cucuteni B culture or the Getic period. Each village has its own church, the population also maintaining traditional occupations and popular art;

- the recreation relations are at the moment less intensely exploited, the commune yet benefiting from extremely favorable conditions for tourism and sport.

The urbanistic equipment is realized for electrical energy supply, communication network through optical fiber and road access to the commune. Yet the water supply is done through wells, the territory lacking hydrotechnical works for river bank protection or for water supply. The collection of sewage waters is not conducted, the uncontrolled spilling being done in Horaița. The commune also

lacks a natural gas supply pipe. Up to 2009 there weren't conducted determinations regarding the quality of the water used by the inhabitants for drinking. The first determinations conducted in July 2009 evidence the bacteriologic pollution of the underground waters only in the central area of Negrești commune, where dwellings are frequent.

The dysfunctions existing in the commune refer to:

- most of the houses has only one level, isolated they have a second floor and use dry toilets;
- in what regards architecture houses do not have a style unity;
- the public institutions have improper headquarters for their activities;
- the commune's localities don't have water supply;
- there is no sewage network or cleaning station, only some recent constructions being accompanied by septic tanks;
- there is no rainfall water collecting network;
- the cemeteries lack a sanitary protection perimeter;
- there are no sport or recreation areas;
- the crop structure is unbalanced, fact that makes impossible the application of crop rotation;
- the mechanical work on agricultural terrains is less used, thus determining low productions;
- a continuous decrease of cattle number;
- a low effective load of cattle on pastures.

The only facility the commune benefits from is represented by the 156 A road, which is asphalted and completely crosses the territory along the Horaița brook.

In conformity with the General Urban Plan, the priorities on short and mean term for the agricultural activities are:

- eliminating the restrictions that limit the productive capacity of the terrains, through the realization and application of agrarian improvement projects;
- organizing the territory for an efficient exploitation of the terrains;
- improving the productive capacity of pastures by fertilizations and efficient exploitation in a parceled system;
- creating agricultural exploitations in associations of landowners;
- assuring the technological, soil, agrochemical, crop and husbandry protection assistance for farmers;
- promoting specific crediting methods for an insurance system and subventions for agricultural production;
- realizing water supply networks at the village level;
- improving road quality;
- creating a center at the commune level with competences in seeds and the supply with fertilizers and pesticides;

- improving the crop structure in the territory and cultivating these crops in rotations;
- re-dimensioning the cattle effectives according to the optimum ratio between species and local forage availability.

On long term, the GUP proposes the following actions:

- re-establishing and extending the forest fund;
- using the hydro-technical potential;
- using the natural potential of the flora and fauna and
- the integrated environmental protection, mainly through selective waste collection, sewage water collecting and their transport towards a cleaning station before spilling into Horaița brook.

## **2. The impact of territory activities on the environmental factors and measures needed for environmental protection**

The territory of Negrești commune is affected, due to the activities taking place, by a permanent pressure on each environmental factor.

The landscape conditions are in a continuous change because of the favorable fluvio-denudational processes, as a consequence of deforestation. Also, the uniformity and length of slopes allowed the extension of torrential valleys, locally affected by landslides.

The water factor supports a constant pressure from human activities through waste spills on the river banks, the emplacement of dry toilets and the retaining of animal waste in backyards or on the fields in un-managed places. These used waters reach the brooks through the existing network of ditches or in the underground through infiltration.

The soils are permanently exposed to erosion due to cultivation, and the un-organized depositing of waste constitutes a permanent source of pollution.

Water protection can be conducted through the controlled and rhythmic collection and evacuation of waste, respecting protection measures, inclusively assuring a water reserve, and by educating population in what regards waste sorting, measures which will gradually ensure an increase in the quality of water used in population alimentation.

Soil protection needs ensuring the normal functionality of machines, respecting specific technologies, a selective collection of waste and their depositing in specially managed platforms.

**As risk situations** for the perimeter of the proposed built area is specified flood occurrence along Horaița, with large extension into the built area, as well as the occurrence of landslides in the outer region.

**The proposed measures**, which desire to solve the existing dysfunctions, are represented by:

- educating the population and creating collecting points for selective waste;
- creating ecological platforms for animal manure;
- identifying safe sources of drinking water, and collecting water in reservoirs placed on higher altitudes for alimentation;
- creating a drainage network and a water cleaning-treatment station in each village;
- the insurance of the cemeteries with a sanitary protection perimeter;
- discharge regularization on Horaița;
- planting the surfaces affected by erosion and landslides;
- stopping water pollution with wastes and creating a sanitary protection perimeter for surface waters, with an interdiction for buildings;
- creating spaces for recreation in the built area, managing green areas;
- creating, cleaning and maintaining ditches along roads to help evacuate water from precipitations;
- improving the roads in the interior of the two localities.

The data presented allow the appreciation that the pollution process will gradually decrease as intensity in the territory, and that the problems on which the local activities will focus will shortly allow that this commune will become a source of raw agricultural materials, by cultivating crops favorable to the region.

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